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10/767,034	01/28/2004	Kartik B. Ariyur	H0004975-1065	4798

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HONEYWELL INTERNATIONAL INC.
101 COLUMBIA ROAD
P O BOX 2245
MORRISTOWN, NJ 07962-2245

EXAMINER	
LE, JOHN H	
ART UNIT	**PAPER NUMBER**
2863	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/14/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/767,034	ARIYUR ET AL.	
	Examiner	Art Unit	
	John H. Le	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *01/28/04, 08/08/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 14-40 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The claims are directed to a judicial exception; as such, pursuant to the Interim Guidelines on Patent Eligible Subject Matter (MPEP 2106), the claims must have either physical transformation and/or a useful, concrete and tangible result. The claims fail to include transformation from one physical state to another. Although, the claims appear useful and concrete, there does not appear to be tangible result claimed.

Regarding claims 14-25, merely selecting an upper confidence bound and a lower confidence bound for each data point that results in the smallest confidence interval would not appear to be sufficient to constitute a tangible result, since the outcome of the selecting step has not been used in a disclosed practical application nor made available in such a manner that it's usefulness in a disclosed practical application can be realized. Therefore, claim(s) 14-25 appear(s) non-statutory.

Regarding claims 26-40, merely signal bearing media bearing said trending program would not appear to be sufficient to constitute a tangible result, since the outcome of the bearing step has not been used in a disclosed practical application nor

made available in such a manner that it's usefulness in a disclosed practical application can be realized. Therefore, claim(s) 26-40 appear(s) non-statutory.

3. Claims 26-40 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Regarding claims 26-40, it appears to be directed to software, per se, lacking storage on a computer readable medium, which enables any underlying functionality to occur. Therefore, the software itself would make it non-statutory. See MPEP 2105 (111)(1)(a). Therefore, claims 26-40 appear non-statutory.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1-12, 14-24, 26-39 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 23-36 of U.S.

Application No. 11/063,296 (US 2005/0165520 A1). Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 23-36 of prior art anticipate claims 1-12, 14-24, 26-39 of instant application as follows:

Application # 11/063,296	Instant application
23. A trending system comprising: a trending program; and signal bearing media bearing the trending program; and wherein: the trending program comprises a sliding window filter; the sliding window filter receives a data set from a physical system; the data set comprises a plurality of data points; the sliding window filter selects multiple data windows in the data set; each of the data windows has a subset plurality of the data points in the data set; the sliding window filter generates upper confidence bounds and lower confidence bounds for each data point using each of the multiple data windows that includes the data point; and the sliding window filter selects an upper confidence bound and a lower confidence bound for each data point that results in the smallest confidence interval for that data point.	1. A trending system for trending data from a physical system, the trending system comprising: a sliding window filter, the sliding window filter receiving a data set from the physical system, the data set comprising a plurality of data points, the sliding window filter selecting multiple data windows in the data set, with each of the data windows including a subset plurality of the data points in the data set, the sliding window filter generating upper confidence bounds and lower confidence bounds for each data point using each of the multiple data windows that includes the data point, the sliding window filter selecting an upper confidence bound and a lower confidence bound for each data point that results in the smallest confidence interval for that data point.
26. The trending system of claim 23, wherein the sliding window filter outputs a filtered estimate of the data set.	2. The system of claim 1 wherein the sliding window filter outputs a filtered estimate of the data set.
27. The trending system of claim 23, wherein the sliding window filter determines the upper confidence bounds and lower confidence bounds through linear regression and statistical inference of the data set.	3. The system of claim 1 wherein the sliding window filter determines the upper confidence bounds and lower confidence bounds through linear regression and statistical inference of the data set.
28. The trending system of claim 27, wherein the sliding window filter performs the statistical inference using Student-t statistics.	4. The system of claim 3 wherein the sliding window filter performs the statistical inference using Student-t statistics.
29. The trending system of claim 23, wherein: the trending	5. The system of claim 1 further comprising a trend change

program further comprises a trend change detection mechanism; the trend change detection mechanism determines a first convex hull for a set of upper confidence bounds and a second convex hull for a set of lower confidence bounds; a comparator mechanism compares the first convex hull and the second convex hull to determining a transition point in the data set; and an estimated trend of the data set is determined from the transition point.	detection mechanism, the trend change detection mechanism determining a first convex hull for a set of upper confidence bounds and a second convex hull for a set of lower confidence bounds, the extrapolation mechanism comparing the first convex hull and the second convex hull to determining a transition point in the data set, the extrapolation mechanism determining an estimated trend of the data set based on the transition point and the set of upper confidence bounds and the set of lower confidence bounds.
30. The trending system of claim 29, wherein the trend change detection mechanism compares the first convex hull to the second convex hull by determining if the first convex hull and the second convex hull intersect.	6. The system of claim 5 wherein the trend change detection mechanism compares the first convex hull to the second convex hull by determining if the first convex hull and the second convex hull intersect.
31. The trending system of claim 29, wherein the trend change detection mechanism compares the first convex hull and the second convex hull to determine a transition point in the data stream by determining if the first convex hull and the second convex hull intersect, and by iteratively discarding points in the data set and generating a new first convex hull and a new second convex hull until there is no intersection between the new first convex hull and the new second convex hull.	7. The system of claim 5 wherein the trend change detection mechanism compares the first convex hull and the second convex hull to determine a transition point in the data stream by determining if the first convex hull and the second convex hull intersect, and by iteratively discarding points in the data set and generating a new first convex hull and a new second convex hull until there is no intersection between the new first convex hull and the new second convex hull.
32. The trending system of claim 23, wherein: the trending program further comprises an outlier elimination mechanism; the outlier elimination mechanism removes statistical outliers in the data set by generating a first prediction cone for data points in a left sample window, generating a second prediction cone for data points in a right sample window, and determining if data points in a test window reside in the first prediction cone or the second prediction cone; and a data point in the test window that does not reside in the first prediction cone or the second	8. The system of claim 1 wherein the trending system further comprises an outlier elimination mechanism, the outlier elimination mechanism removing statistical outliers in the data set by generating a first prediction cone for data points in a left sample window, generating a second prediction cone for data points in a right sample window, and determining if data points in a test window reside in the first prediction cone and the second prediction cone.

prediction cone is an outlier.	
33. The trending system of claim 32, wherein the outlier elimination mechanism generates the first prediction cone and the second prediction cone by linear regression of the data points in the left sample window and linear regression of the data points in the right sample window.	9. The system of claim 8 wherein the outlier elimination mechanism generates the first prediction cone and the second prediction cone by linear regression of the data points in the left sample window and linear regression of the data points in the right sample window.
34. The trending system of claim 33, wherein the outlier elimination mechanism moves the left sample window, right sample window, and test window through the data set to remove outliers through out the data set.	10. The system of claim 9 wherein the outlier elimination mechanism moves the left sample window, right sample window, and test window through the data set to remove outliers through out the data set.
35. The trending system of claim 32, wherein the outlier elimination mechanism determines outliers by a weighted reciprocal of confidence intervals generated by prediction cones.	11. The system of claim 8 wherein the outlier elimination mechanism determines outliers by a weighted reciprocal of confidence intervals generated by prediction cones.
36. The trending system of claim 23, wherein adjacent windows in the multiple data windows overlap in the data set.	12. The system of claim 1 wherein adjacent windows in the multiple data windows overlap in the data set.
23. A trending system comprising: a trending program; and signal bearing media bearing the trending program; and wherein: the trending program comprises a sliding window filter; the sliding window filter receives a data set from a physical system; the data set comprises a plurality of data points; the sliding window filter selects multiple data windows in the data set; each of the data windows has a subset plurality of the data points in the data set; the sliding window filter generates upper confidence bounds and lower confidence bounds for each data point using each of the multiple data windows that includes the data point; and the sliding window filter selects an upper confidence bound and a lower confidence bound for each data point that results in the smallest confidence interval for that data	14. A method of trending data from a physical system, the method comprising the steps of: a) receiving, from the physical system, a data set comprising a plurality of data points; b) selecting multiple data windows in the data set, each of the data windows including a subset plurality of data points; c) generating upper confidence bounds and lower confidence bounds for each of the data points using each of the multiple data windows that includes the data point; and d) selecting an upper confidence bound and a lower confidence bound for each data point that results in the smallest confidence interval.

point.	
26. The trending system of claim 23, wherein the sliding window filter outputs a filtered estimate of the data set.	15. The method of claim 14 further comprising the step of generating a filtered estimate of the data set from the selected upper confidence bounds lower confidence bounds for each data point.
27. The trending system of claim 23, wherein the sliding window filter determines the upper confidence bounds and lower confidence bounds through linear regression and statistical inference of the data set..	16. The method of claim 14 wherein the step of generating upper confidence bounds and lower confidence bounds comprises generating through a linear regression and statistical inference.
28. The trending system of claim 27, wherein the sliding window filter performs the statistical inference using Student-t statistics.	17. The method of claim 16 wherein the statistical inference comprises using student-t statistics.
29. The trending system of claim 23, wherein: the trending program further comprises a trend change detection mechanism; the trend change detection mechanism determines a first convex hull for a set of upper confidence bounds and a second convex hull for a set of lower confidence bounds; a comparator mechanism compares the first convex hull and the second convex hull to determining a transition point in the data set; and an estimated trend of the data set is determined from the transition point.	18. The method of claim 14 further comprising the step of generating a first convex hull from a first set of upper confidence bounds generating a second convex hull from a second set of lower confidence bounds, and further comprising the step determining a transition point in the data set from the first convex hull and the second convex hull.
30. The trending system of claim 29, wherein the trend change detection mechanism compares the first convex hull to the second convex hull by determining if the first convex hull and the second convex hull intersect.	19. The method of claim 18 wherein the step of determining a transition point in the data stream from the first convex hull and the second convex hull comprises determining if the first convex hull and the second convex hull intersect.
31. The trending system of claim 29, wherein the trend change detection mechanism compares the first convex hull and the second convex hull to determine a transition point in the data stream by determining if the first convex hull and the second	20. The method of claim 18 wherein the step of determining a transition point in the data stream from the first convex hull and the second convex hull comprises comparing the first convex hull to the second convex hull to determine if the first convex hull

convex hull intersect, and by iteratively discarding points in the data set and generating a new first convex hull and a new second convex hull until there is no intersection between the new first convex hull and the new second convex hull.	and the second convex hull intersect, and further comprises iteratively discarding points in the data set and generating a new first convex full and a second new convex full until there is no intersection between the first new convex hull and the second new convex hull.
32. The trending system of claim 23, wherein: the trending program further comprises an outlier elimination mechanism; the outlier elimination mechanism removes statistical outliers in the data set by generating a first prediction cone for data points in a left sample window, generating a second prediction cone for data points in a right sample window, and determining if data points in a test window reside in the first prediction cone or the second prediction cone; and a data point in the test window that does not reside in the first prediction cone or the second prediction cone is an outlier.	21. The method of claim 14 further comprising the step of removing outlier data from the data stream by generating a first prediction cone for data points in a left sample window, generating a second prediction cone for data points in a right sample window, and determining if data points in a test window reside in the first prediction cone and the second prediction cone.
33. The trending system of claim 32, wherein the outlier elimination mechanism generates the first prediction cone and the second prediction cone by linear regression of the data points in the left sample window and linear regression of the data points in the right sample window.	22. The method of claim 21 wherein the first prediction cone and the second prediction cone are generated by linear regression of the data points in the left sample window and linear regression of the data points in the right sample window.
34. The trending system of claim 33, wherein the outlier elimination mechanism moves the left sample window, right sample window, and test window through the data set to remove outliers through out the data set.	23. The method of claim 21 comprising the step of moving the left sample window, right sample window and test window through the data set to remove outliers through out the data set.
36. The trending system of claim 23, wherein adjacent windows in the multiple data windows overlap in the data set.	24. The method of claim 14 wherein adjacent windows in the multiple data windows overlap in the data set.
23. A trending system comprising: a trending program; and signal bearing media bearing the trending program; and	26. A program product comprising: a) a trending program, the trending program including: a sliding window filter, the sliding

wherein: the trending program comprises a sliding window filter; the sliding window filter receives a data set from a physical system; the data set comprises a plurality of data points; the sliding window filter selects multiple data windows in the data set; each of the data windows has a subset plurality of the data points in the data set; the sliding window filter generates upper confidence bounds and lower confidence bounds for each data point using each of the multiple data windows that includes the data point; and the sliding window filter selects an upper confidence bound and a lower confidence bound for each data point that results in the smallest confidence interval for that data point.	window filter receiving a data set from the physical system, the data set comprising a plurality of data points, the sliding window filter selecting multiple data windows in the data set, with each of the data windows including a subset plurality of the data points in the data set, the sliding window filter generating upper confidence bounds and lower confidence bounds for each data point using each of the multiple data windows that includes the data point, the sliding window filter selecting an upper confidence bound and a lower confidence bound for each data point that results in the smallest confidence interval for that data point; and b) signal bearing media bearing said trending program.
24. The trending system of claim 23, wherein the signal bearing media comprises recordable media.	27. The program product of claim 26 wherein the signal bearing media comprises recordable media.
25. The trending system of claim 23, wherein the signal bearing media comprises transmission media.	28. The program product of claim 26 wherein the signal bearing media comprises transmission media.
26. The trending system of claim 23, wherein the sliding window filter outputs a filtered estimate of the data set.	29. The program product of claim 26 wherein the sliding window filter outputs a filtered estimate of the data set.
27. The trending system of claim 23, wherein the sliding window filter determines the upper confidence bounds and lower confidence bounds through linear regression and statistical inference of the data set.	30. The program product of claim 26 wherein the sliding window filter determines the upper confidence bounds and lower confidence bounds through linear regression and statistical inference of the data set.
28. The trending system of claim 27, wherein the sliding window filter performs the statistical inference using Student-t statistics.	31. The program product of claim 30 wherein the sliding window filter performs the statistical inference using Student-t statistics.
29. The trending system of claim 23, wherein: the trending program further comprises a trend change detection mechanism; the trend change detection mechanism determines	32. The program product of claim 26 wherein the trending program further comprises a trend change detection mechanism, the trend change detection mechanism determining

a first convex hull for a set of upper confidence bounds and a second convex hull for a set of lower confidence bounds; a comparator mechanism compares the first convex hull and the second convex hull to determining a transition point in the data set; and an estimated trend of the data set is determined from the transition point.	a first convex hull for a set of upper confidence bounds and a second convex hull for a set of lower confidence bounds, the extrapolation mechanism comparing the first convex hull and the second convex hull to determining a transition point in the data set, the extrapolation mechanism determining an estimated trend of the data set based on the transition point and the set of upper confidence bounds and the set of lower confidence bounds.
30. The trending system of claim 29, wherein the trend change detection mechanism compares the first convex hull to the second convex hull by determining if the first convex hull and the second convex hull intersect.	33. The program product of claim 32 wherein the trend change detection mechanism compares the first convex hull to the second convex hull by determining if the first convex hull and the second convex hull intersect.
31. The trending system of claim 29, wherein the trend change detection mechanism compares the first convex hull and the second convex hull to determine a transition point in the data stream by determining if the first convex hull and the second convex hull intersect, and by iteratively discarding points in the data set and generating a new first convex hull and a new second convex hull until there is no intersection between the new first convex hull and the new second convex hull.	34. The program product of claim 32 wherein the trend change detection mechanism compares the first convex hull and the second convex hull to determine a transition point in the data stream by determining if the first convex hull and the second convex hull intersect, and by iteratively discarding points in the data set and generating a new first convex hull and a new second convex hull until there is no intersection between the new first convex hull and the new second convex hull.
32. The trending system of claim 23, wherein: the trending program further comprises an outlier elimination mechanism; the outlier elimination mechanism removes statistical outliers in the data set by generating a first prediction cone for data points in a left sample window, generating a second prediction cone for data points in a right sample window, and determining if data points in a test window reside in the first prediction cone or the second prediction cone; and a data point in the test window that does not reside in the first prediction cone or the second prediction cone is an outlier.	35. The program product of claim 26 wherein the trending program further comprises an outlier elimination mechanism, the outlier elimination mechanism removing statistical outliers in the data set by generating a first prediction cone for data points in a left sample window, generating a second prediction cone for data points in a right sample window, and determining if data points in a test window reside in the first prediction cone and the second prediction cone.

33. The trending system of claim 32, wherein the outlier elimination mechanism generates the first prediction cone and the second prediction cone by linear regression of the data points in the left sample window and linear regression of the data points in the right sample window.	36. The program product of claim 35 wherein the outlier elimination mechanism generates the first prediction cone and the second prediction cone by linear regression of the data points in the left sample window and linear regression of the data points in the right sample window.
34. The trending system of claim 33, wherein the outlier elimination mechanism moves the left sample window, right sample window, and test window through the data set to remove outliers through out the data set.	37. The program product of claim 36 wherein the outlier elimination mechanism moves the left sample window, right sample window, and test window through the data set to remove outliers through out the data set.
35. The trending system of claim 32, wherein the outlier elimination mechanism determines outliers by a weighted reciprocal of confidence intervals generated by prediction cones.	38. The program product of claim 35 wherein the outlier elimination mechanism determines outliers by a weighted reciprocal of confidence intervals generated by prediction cones.
36. The trending system of claim 23, wherein adjacent windows in the multiple data windows overlap in the data set.	39. The program product of claim 26 wherein adjacent windows in the multiple data windows overlap in the data set.

Other Prior Art

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

McCarty, Jr et al. (USP 6,704,353) disclose a method and apparatus for tracking the magnitude of channel induced distortion to a transmitted signal include a sliding window filter.

Wildes (US 5,319,583) disclose a digital computer sliding-window minimum filter.

Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John H. Le whose telephone number is 571 272 2275. The examiner can normally be reached on 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow can be reached on 571 272 2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll- free).

John H. Le
Patent Examiner-Group 2863
March 5, 2007

John Barlow
Supervisory Patent Examiner
Technology Center 2800